

REMARKS

Claims 4-30, 45, 46 and 48-52 are pending. By this Amendment, claims 1-3, 31-44 and 47 are canceled, claims 4-6, 17, 18 and 45 are amended, and claims 49-52 are added. Figs. 6 and 7 have also been amended to add the legend "Related Art". Applicant reserves the right to file one or more divisional applications to pursue the subject matter of the withdrawn cancelled claims.

An Election of Species was required in this application. Accordingly, Applicant elected Species II, Figs. 8-18. Applicant asserts that claims 4-30, 45, 46 and 48-52 read on elected Figs. 8-18.

The drawings were objected to based on an informality. By this Amendment, Figs. 6 and 7 have been amended to use the legend "Related Art" in accordance with the legend provided in the specification. It is respectfully requested that the objection be withdrawn.

Claims 1-5, 14, 15, 19-21, 25, 26, 39-43 and 48 were rejected under 35 U.S.C. §102(e) over Kijima et al. (Kijima), U.S. Patent No. 6,661,451. The rejection of the remaining claims is respectfully traversed.

Kijima fails to disclose a digital camera with a processor for light metering read signals of given pixels located in a given area narrower than the whole imaging area of the image sensor, and including a timer for determining a time length from a start of the accumulation of charge to a time when a signal from the image sensor reaches a predetermined level, the light metering being on the basis of the time length, as recited in claim 4.

Kijima discloses an imaging apparatus that performs an automatic exposure (AE) calculation that is based on an electric charge level that is accumulated in one frame as a unit. In other words, the AE calculation is performed in accordance with the driving method of the image sensor wherein the frame rate is 1/45, 1/30, 1/10 and 1/60 sec. Conversely, in claim 4,

a timer determines a time length from a start of the accumulation of charge to a time when a signal from the image sensor reaches a predetermined level. Based on this calculated time length, light metering is performed. In other words, when a charge level reaches a predetermined level at 1/512 sec, for example, 1/512 sec is used. Kijima fails to disclose this feature because Kijima fails to set light metering based on a determined time length. As such, Kijima fails to disclose all of the features recited in claim 4, as well as the additional features recited in the dependent claims.

Kijima also fails to disclose a digital camera with an image sensor having a plurality of two dimensionally arranged pixels capable of selectively reading out signals from desired pixels for the purpose of at least two of the processes for light metering, focus detection, white balance calculation and picture image forming, wherein one process is started in response to completion of outputting the signals for another process, as recited in claim 48.

In Kijima, the electronic imaging apparatus obtains control data for an automatic focusing mechanism (AF), an automatic white balance adjustment mechanism (AWB), and an automatic exposure adjustment mechanism (AE) for every frame, that is, every 1/60 second (col. 13, lines 59-63). In other words, every process in Kijima is started after another process is completed.

Conversely, in claim 48, one process is started after the output of signals is completed for another process. In other words, one process is started in claim 48 when the output of signals is completed and not when another process is completed as in Kijima. The time lag required to form an image can be minimized.

In view of the foregoing, Kijima also fails to disclose all of the features recited in claim 48.

It is respectfully requested that the rejection be withdrawn.

Claim 45 was rejected under 35 U.S.C. §102(b) over Suga et al. (Suga), U.S. Patent No. 5,363,137. The rejection is respectfully traversed.

Suga fails to disclose a digital camera with an output reader for getting the outputs from the pixels for the purpose of at least two processes, after signals of the pixels are output for a first process, by outputting signals of the pixels continuously formed without being reset for the purpose of at least a second process, as recited in claim 45.

Suga discloses a focus adjusting apparatus, wherein an output is reset at a time t1 (Figs. 5 and 6). If light is applied, the output potential is increased with the passage of time. The potential of the sample and hold circuit and the line memory 107 is clamped, at a time t2, immediately before resetting (col. 5, lines 22-30). In other words, in each scanning process, (i.e., Photometry Scanning M, AF scanning 1 and AF Scanning N) the charge in the output from the light-receiving element is always reset (i.e., the charge is not used for another process).

Conversely, as recited in claim 45, the outputs from the pixels for the purpose of at least two processes are obtained by outputting signals of the pixels continuously formed without being reset for the purpose of at least the second process.

In view of the foregoing, Suga fails to disclose all of the features recited in claim 45. It is respectfully requested that the rejection be withdrawn.

Claims 45-47 were rejected under 35 U.S.C. §102(e) over Hata, U.S. Publication No. US 2004/0061801. The rejection of the remaining claims is respectfully traversed.

Hata fails to disclose a digital camera with an output reader for getting the outputs from the pixels for the purpose of at least two processes, after signals of the pixels are output for a first process, by outputting signals of the pixels continuously formed without being reset for the purpose of at least a second process, as recited in claim 45.

Hata discloses an automatic focusing device wherein a single output signal level that is output from the same area is simply used for AF calculation and AE calculation (Figs. 2, 8 and 9). The AF calculation is performed while the AE calculation is performed using the same single output signal level. As such, Hata does not output signals of the pixels continuously formed without being reset for the purpose of at least a second process.

In view of the foregoing, Hata fails to disclose all of the features recited in claim 45.

Hata also fails to disclose a digital camera with an image sensor having a plurality of two-dimensionally arranged pixels capable of selectively reading out signals from desired pixels for the purpose of at least two of the processes for light metering, focus detection, white balance calculation and picture image forming; the image sensor having a plurality of amplifiers of variable gain for amplifying the signals of the pixels, respectively, as recited in claim 46.

As shown in Figs. 1 and 2, although Hata discloses a VG amplifier 105 and a digital gain control module 1075, the VG amplifier 105 and the digital gain control module 1075 are not gain amplifiers located in a single image sensor. Conversely, as recited in claim 46, the image sensor has a plurality of amplifiers of variable gain. As such, a signal is output after forming a signal having the best S/N ratio by varying gains of the plurality of amplifiers.

In view of the foregoing, Hata also fails to disclose all of the features recited in claim 46.

It is respectfully requested that the rejection be withdrawn.

Claims 4, 14-16 and 48 were rejected under 35 U.S.C. §102(e) over Hieda et al. (Hieda), U.S. Patent No. 6,353,488. The rejection is respectfully traversed.

Hieda fails to disclose a digital camera with a processor for light metering read signals of given pixels located in a given area narrower than the whole imaging area of the image sensor, and including a timer for determining a time length from a start of the accumulation of

charge to a time when a signal from the image sensor reaches a predetermined level, the light metering being on the basis of the time length, as recited in claim 4.

Hieda discloses an image sensing apparatus wherein signals for a given area are selected by frame signals SG2 and SG3 generated by an H counter and a V counter, respectively, from all output signals read out from the image sensor (col. 8, lines 15-35). However, Hieda fails to select desired pixels in order to read out output signals, as recited in claim 4.

Also, in Hieda, a horizontal synchronization pulse HD and a vertical synchronization pulse VD are supplied from a timing generating circuit 11. The frame signals SG2 and SG3 are generated on the basis of the signals HD and VD. As such, the timing generating circuit 11 is not used to determine a time length from a start of the accumulation of charge to a time when a signal from the image sensor reaches a predetermined level. As such, Hieda fails to disclose the time length of claim 4.

In view of the foregoing, Hieda fails to disclose all of the features recited in claim 4 as well as the additional features recited in the dependent claims.

Hieda also fails to disclose a digital camera with an image sensor having a plurality of two dimensionally arranged pixels capable of selectively reading out signals from desired pixels for the purpose of at least two of the processes for light metering, focus detection, white balance calculation and picture image forming, wherein one process is started in response to completion of outputting the signals for another process, as recited in claim 48.

In Hieda, similar to Kijima, a process is started after another process has been completed (Figs. 12-15 and 18-19) and not when an output of signals is completed. The processes in Hieda are started in response to a VD interruption (col. 10, lines 22-37).

In view of the foregoing, Hieda also fails to disclose all of the features recited in claim 48.

It is respectfully requested that the rejection be withdrawn.

Claims 4-14, 17, 18, 42, 44 and 45 were rejected under 35 U.S.C. §102(b) over Suzuki et al. (Suzuki), U.S. Patent No. 5,751,354. The rejection of the remaining claims is respectfully traversed.

Suzuki fails to disclose a digital camera with a processor for light metering read signals of given pixels located in a given area narrower than the whole imaging area of the image sensor, and including a timer for determining a time length from a start of the accumulation of charge to a time when a signal from the image sensor reaches a predetermined level, the light metering being on the basis of the time length, as recited in claim 4.

Suzuki discloses an image sensing apparatus wherein, when an output is read from the image sensing device, ordinary readout is performed with regard to pixels in a center portion a (Figs. 12A and 12B) and a high-speed readout is performed with regard to the pixels in portion b (Figs. 12A and 12B). Moreover, the mid-portion of the signal normally read out from the portion a of the image sensing device is extracted by a line memory so as to make it possible to match the designating frame and the actually extracted frame. However, Suzuki does not selectively read out output signals of desired pixels as in claim 4.

Furthermore, the exposure adjustment includes two steps, coarse adjustment and fine adjustment. In coarse adjustment, all pixels of the image sensing device are integrated to derive primary exposure as discussed in step S208 in Fig. 3. In fine adjustment, a signal of a range finding area is read out (for example, in step S228) and an exposure amount is derived based on the signal (step S228, col. 12, lines 26-57).

As such, Suzuki does not selectively read out output signals of desired pixels as recited in claim 4. Furthermore, fine adjustment is not carried out, in Suzuki, on the basis of

the time length from the start of accumulation of charge to a time when a signal from the image sensor reaches a predetermined level.

In view of the foregoing, Suzuki fails to disclose all of the features recited in claim 4, as well as the additional features recited in the dependent claims.

Suzuki also fails to disclose a digital camera with an output reader for getting the outputs from the pixels for the purpose of at least two processes, after signals of the pixels are output for a first process, by outputting signals of the pixels continuously formed without being reset for the purpose of at least a second process, as recited in claim 45.

In Suzuki, the same signal for the image-capture rangefinding area that is read out by a high-speed readout is used for AF, AE and AWB processes (focusing, exposure and WB calculation as shown in steps S217 and S218 in Fig. 4).

As such, pixels are not continuously formed in Suzuki without being reset for the purpose of at least a second process.

In view of the foregoing, Suzuki also fails to disclose all of the features recited in claim 45.

It is respectfully requested that the rejection be withdrawn.

Claims 27, 29 and 30 were rejected under 35 U.S.C. §103(a) over Kijima in view of JP11-344662 (JP'662), and claim 30 was rejected under 35 U.S.C. §103(a) over Kijima in view of JP'622 and in view of JP 09-184973 (JP'973). The rejections are respectfully traversed.

JP'662 and JP'973 fail to overcome the deficiencies of Kijima as applied to claim 4. It is respectfully requested that the rejections be withdrawn.

The applied references also fail to disclose or suggest all of the features recited in claims 49-52 for reasons similar to the above independent claims.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the claims are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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Attachment:
Replacement Sheets

Date: October 22, 2004

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